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Advanced Accident Detection Using NFC Technology

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ABSTRACT: With the increase of vehicles in today's world, fatalities occurring has attained its peak with more death rates. To reduce the recovery time and emergency personnel arrives, and to make mandatory use of license we propose a system that includes more detailed instant services to notify the injuries. Locating the exact incident may be a challenging task, but using GPS integrated with an embedded license has made it possible to reach out to the position, which has extended along with a profile of the user like name, blood group, license number, emergency number. This proposed system helps to alert the emerging requirements after an accident (like police stations and ambulance) service through GSM including the user condition with regard to extremity. In this project, we use NFC (Near-Field Communication). The NFC tag would be compulsorily placed in all vehicles. Also heart beat sensor is placed in the vehicle to detect the driver status during accidents. GSM and GPS sensors are also integrated along with the vehicle kit. We have placed flux sensor to detect major accident. Once the accident is been detected, the heart beat rate along with NFC tag details and current location is been uploaded in a cloud server using Internet of Things (IoT). Also alert message is been sent to the police stations and ambulance. Also to prevent accidents and rash driving, 3 times if the flux sensor is slightly triggered the NFC tag would be disabled. Since we embed and upload the driver license number in the tag, it would be seen by the government officials and respective actions would be taken.

KEYWORDS: Raspberry pi3, NFC, Internet of things, Element, Climate Notification, python.

I. INTRODUCTION

An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers. Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result. NFC cards have brought a revolution in how industry takes care of large number of products. Either it has products in shopping mall, vehicles in an assembly line of a manufacturing unit or employee attendance etc., NFC card is nothing but a small electronic device either actively or passively functioned.

One of the key elements of NFC, near field communications technology is the ability for NFC enabled devices to be able to be touched onto passive "NFC tags." This facility of NFC technology is a key enabler for many applications. The NFC tags are now being manufactured in vary large volumes and they are being deployed in a number of areas of the world. Already many millions have been deployed and as NFC gains further momentum, tags

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will be seen in many new areas. NFC tags are passive devices that can be used to communicate with active NFC devices (an active NFC reader/writer). The NFC tags can be used within applications such as posters, and other areas where small amounts of data can be stored and transferred to active NFC devices. Within the poster the live area can be used as a touch point for the active NFC device. These devices collect useful data with the help of various existing technologies and then autonomously flow the data between other devices. Current market examples include home automation also known as smart home devices such as the control and automation of lighting,

III. METHODOLOGY

Due to low budget we used a two wheel chassis for the car and implemented all the techniques that gives accurate results

- Raspberry pi3
- Authentication
- Attestation
- Obstacle detection
- Climate notification
- Mutual Authentication

IV. SYSTEM REQUIREMENTS HARDWARE REQUIREMENTS

- 1) Raspberry pi3,
- NFC Reader,
 - NFC Card
 - Camera
 - Flex Sensor
 - LCD

SOFTWARE REQUIREMENTS

- Python software
- Embedded C

V. SYSTEM REQUIREMENT SPECIFICATIONS

Hardware & Software Requirement RASPBERRY PI3

Raspberry pi is a small chip of single board computer .There are various model of raspberry available in the market i.e. the Raspberry Pi1 Model B, Raspberry Pi1 Model B+, Raspberry pi2,Raspberry Pi3 Model B. These all are differ in memory capacity and hardware features like Raspberry pi3 has inbuilt Bluetooth and wifi modules whereas in previous versions these modules were not available .It has 1.2 GHz 64- bit quad core ARMv8 CPU with 1 GB of RAM.

CAMERA

Camera is used to take the continuous images to get the traffic signs and signals from the real world. According to the images available through the camera we can send these images to the raspberry pi to perform car's control action.

NFC READER

Near Field Communication (NFC) is a short-range wireless connectivity standard (Ecma340, ISO/IEC 18092) that uses magnetic field induction to enable communication between devices when they're touched together, or brought within a few centimeters of each other. Jointly developed by Philips and Sony, the standard specifies a way for the devices to establish a peer-to-peer (P2P) network to exchange data.

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PYTHON SOFTWARE

Python is a high level, general purpose programming language used widely in industries and research work also used in making general purpose projects. Its software comes in various version i.e. IDLE python 2, python 3 also in these two types different version of python IDLE are available for programming the python language.

LCD

An LCD is a small low cost display. It is easy to interface with a microcontroller because of an embedded controller (the black blob on the back of the board). This controller is standard across many displays (HD44780) which means many micro-controllers (including the Arduino) have libraries that make displaying messages as easy as a single line of code

V. BLOCK DIAGRAM & WORKING

- 1) **AUTHENTICATION:-** In the discovery stage the picture is pre-handled, improved, and sectioned by sign properties, for example, shading, shape, and measurement. The yield of sectioned picture contains potential data.
 - I. *Mandatory signs:* These types of signs are always available in a round shaped with red border.
 - II. *Cautionary signs:* These types of signs are always available in triangular shape with red border.
 - III. *Information signs:* These types of signs are always available in square shape with blue border.
 - IV. *Additional signs:* All the signs except for the above types of codes known as additional signs.
- 2) **ATTESTATION:-** In this project using ultrasonic sensor and image processing we can get the exact speed to overtake a vehicle ahead of us. When any vehicle comes at the range of my car ultrasonic sensor gives the distance of the next car at regular interval and backside ultrasonic sensor also gives the distance of the result so by getting distance of the next car at regular time we can calculate the maximum speed of our car to overtake the next vehicle that is ahead of my car.
- 3) **MUTUAL AUTHENTICATION:-** It is an image processing technique for finding the boundaries of objects within images. It works by detecting discontinuities in brightness. Edge detection is used for image segmentation and data extraction in areas such as image processing, computer vision, and machine vision.
- 4) **OBSTACLE DETECTION:-** A camera provides rich information that can be processed to extract a large collection of heterogeneous information for the robot to make decisions. A single image allows, for example, to detect colored items, obstacles, people, etc.
- 5) **Climate Notification:-** In temperature monitoring system that consists of sensor and raspberry pi. The system will function like this when sensor detect out of range temperature level, it will send alert notification via email & sms to desired people through raspberry pi.

VI. ADVANTAGES

- 1) Low cost
- Simple to implement

VII. CONCLUSION

The newly framework for NFC secure element based mutual authentication and attestation for IoT access provides a novel on demand communication and control of IoT DEVICES driver helping system has been presented in this paper. The basic idea is to recognize and classify the traffic signs from an input image. The image processing technique used in this system is based on the SURF algorithm. Finally, the recognition and classification of these potential road signs is done according to a database of road sign patterns and controls the speed according to it. The performance of this idea depends on the quality of the input image, in relation to its size, contrast and the way the signs appear in the image. This system is fully based on automation process which replaces the existing manual operation. Automation process, in turn decreases the human error, increases the accuracy, processing speed and reliability. In this report, a method to make a selfresponding robot car is represented

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.Working of different hardware components are described .A way to find the stop signs board and red signals have been defined and also way to detect the obstacles .All methods and algorithm mentioned in this paper are successfully implemented in a robot car of chassis having two wheels.

For future enhancement, more advanced resolution camera and advanced processors can be used in order to detect the sign perfectly and quickly. A System should be developed to monitor the rear end vehicle during the turnings so that the automation process will ensure more safety.

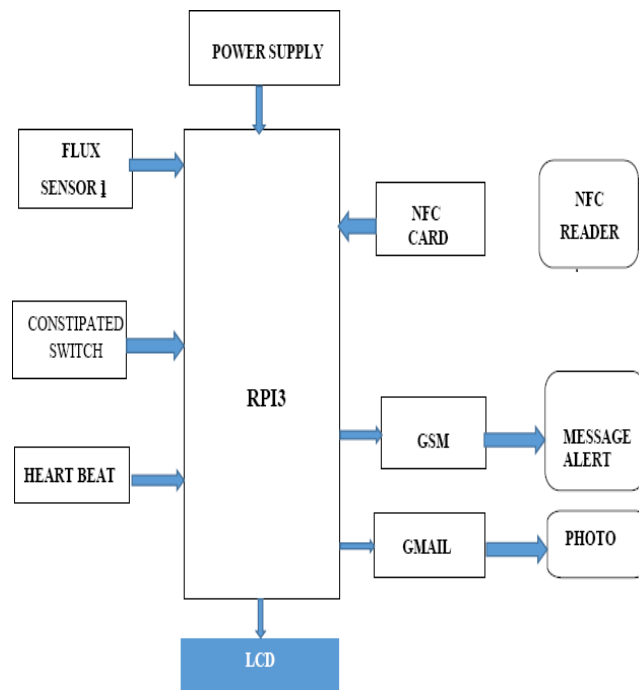
To enhance it more in the future machine learning algo- rithms can be used so it can be able to determine each objects

.The current performance is good but to make it more efficient it is necessary to implement it using machine learning and other algorithms so it will understand more things .So in future to make it more advance it. tional Conference on Energy Systems and Applications (ICESA 2015).

5) <https://www.raspberrypi.org/> - The official website of Raspberry Pi.

6) Mark Lutz, Learning Python: Powerful ObjectOriented Programming: 5th Edition (O'Reilly Me

BLOCK DIAGRAM



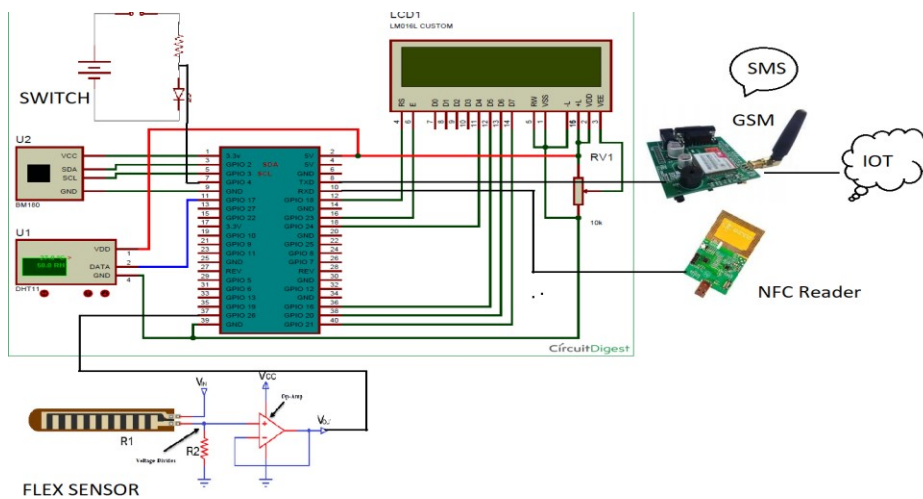
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Fig. 1. Circuit Diagram for Raspberry-pi



REFERENCES

- 1) Ching-Hao Lai, Chia-Chen Yu, "An Efficient Real-Time Traffic Sign Recognition System for Intelligent Vehicles with Smart Phones", IEEE International Conference on Technologies and Applications of Artificial Intelligence, 2010.
- 2) P. Shopa, Mrs. N. Sumitha, Dr. P.S.K Patra. (2014), Traffic Sign Detection and Recognition Using OpenCV", International Conference on ICICES2014 - S.A.Engineering College, Chennai, Tamil Nadu, India. Dr. D. Y. Patil, ,, Advanced NFC technology and the Recognition for Driver Assistance Systems"